source being vehicles, including off-road vehicles, that use paved and unpaved roads. Construction and agriculture also contribute to particulate levels.

3.3 Geology, Soils, and Seismicity

3.3.1 Geology

The proposed transmission line routes are in the Imperial Valley, a part of the Salton Trough, which is a geological structural depression straddling the transform plate boundary between the Pacific and North American plates and extending from Palm Springs in the north to the Gulf of California in the south. The Salton Trough is the terrestrial extension of the East Pacific Rise transform system as it emerges from the Gulf of California and is the southern terminus of the San Andreas Fault Zone. The transition from the divergent, spreading tectonic regime of the East Pacific Rise to the dominantly strike-slip faulting of the San Andreas Fault Zone has downwarped, downfaulted, extended, and laterally translated the sediments within the Salton Trough. The underlying geologic complexity of the Salton Trough is masked by the relatively featureless surface of the basin, which is filled by thousands of meters of marine and nonmarine sediments.

The sub-sea level basin of the Salton Trough has received a continuous influx of sand, silt, and clay derived from the Colorado River which created ephemeral lakes in the basin until about 300 years ago. Underlying these deposits, sedimentary rocks are believed to extend to a depth of about 16,000 feet. Lying below the sedimentary rocks are approximately 23,000 feet of metamorphosed (greenschist facies) rocks which in turn overlie approximately 6,000 feet of gabbro. Metamorphism of the sedimentary rocks is occurring at relatively shallow depths due to high heat flow over inferred active spreading basin areas. Several areas of the Imperial Valley are classified as "Known Geothermal Resource Areas" because of the presence of high temperature hydrothermal fluids. Tectonic activity that formed the trough continues at a high rate, evidenced by deformed young sedimentary deposits, high sediment deposition rates, and high levels of seismicity.

The proposed transmission line routes are located at the transition from the West Mesa to the wide plain of the Imperial Valley. The West Mesa is composed of interbedded sands, silts, and clays of Pliocene to Pleistocene age and alluvial fan deposits. Desert pavement is common in the sandy areas with usually dry washes dissecting the topography. The agricultural areas of the Imperial Valley, generally a little over a mile east of the proposed routes, are composed dominantly of clays with interbeds of lacustrine sand and silt.

3.3.2 Soils

The soils within the study area are predominantly lacustrine silt and sand deposits with interspersions of alluvial gravels and clays transported by the Colorado River. For the most part, the lacustrine deposits are poorly consolidated and are subject to both water and aeolian erosion. The process of gradual deflation of these deposits has resulted in the formation of desert pavement and protopavement over large areas. Those deposits associated with stable lake stands appear to be especially susceptible to this process. As a result of these factors, most of the surface formations within the project area consist of, or are overlain by, thin aeolian secondary deposits derived from these lacustrine sands and silts. Most of the softer underlying silt/clay formations are dissected by intricate drainage systems trending northward towards the Salton Sea. Ancient beach deposits can often be observed in the banks of these channels.

There are nine soil types present within the survey corridor: Rositas sand, Rositas fine sand, Carsitas gravelly sand, Glenbar complex, Indio-Vint complex, Meloland fine sand, Niland fine sand, pits, and Rositas-Superstition loamy fine sand (U.S. Department of Agriculture [USDA] 1978). The USDA soil survey did not include a portion of the survey corridor south of State Route 98 and west of the existing 230-kV power line. Soils information from this area is not currently available.

3.3.3 Seismicity

The Imperial Valley is one of the most seismically active regions in the nation. Five earthquakes of 5.8 magnitude or greater have occurred in the Imperial Valley in the last 100 years. Several times a year, the Imperial Valley will experience minor tremors, will suffer a moderate quake every five to ten years, and will be subjected to a major quake (magnitude 6 to 7) every 20 to 40 years. Major faults in the area trend generally northwest-southeast, roughly parallel to the proposed transmission line routes. The transmission line routes lie between the Laguna Salada Fault (about 9 miles west), the Superstition Hills Fault (about 9 miles northeast), and the Imperial Fault (about 14 miles east). There has been a major earthquake on each of these faults within the last century.

3.4 Water Resources/Floodplains

The Colorado Desert is subject to extremes of humidity and temperature. Very high summer temperatures, well over 100 degrees Fahrenheit, combine with low rainfall and high evaporation rates to produce an environment that is second only to Death Valley in total aridity. Normal annual precipitation in Calexico is 2.8 inches; in El Centro, it is 2.71 inches. Due to these conditions, there is no surface water in natural areas near the proposed transmission lines, although the Westside Main Canal and other irrigation canals serve the agricultural areas to the east.